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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,130	08/04/2003	Brian G. Johnson	ITO.0045US (P16093)	5774
21906	7590	10/16/2006	EXAMINER	
TROP PRUNER & HU, PC 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631			LE, THAO P	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/634,130

Applicant(s)

JOHNSON ET AL.

Examiner

Thao P. Le

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

Claims 1-30 are pending.

### Claim Objection

Claims 12, 25 are objected to because they depend on themselves.

The remarks made on 09/14/06 are fully considered and found persuasive. The previous rejection has been withdrawn. Claims 1-30 are still rejected in view of new grounds of rejection.

### **Claim Rejections**

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed **before November 29, 2000**. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

**Claims 1, 3, 14, 16, 18, 24-28, 29 are rejected under 35 USC 102 (e) as being anticipated by Parkinson et al., U.S. Pub No. 2004/0114413, hereinafter Parkinson.**

Regarding claims 1, 14, 27, Parkinson discloses a product and method of making the product comprising: a non-switching ovonic material 120 [0035]; a phase changeable material 130 that changes between more conductive and less conductive states (between crystalline, semi-crystalline, amorphous, or semi-amorphous states) coupled to the non-switching ovonic material (Fig. 1, paragraphs 0001, 0025-0035). Parkinson discloses that the ovonic material 120 may remain permanently amorphous and the I-V characteristic may remain the same throughout the operating life [0035]. Since the state of the material 120 doesn't change, the resistance of the layer 120 doesn't change, therefore, the ovonic material 120 is non-switching ovonic material.

Still regarding claim 27, Parkinson discloses the system comprises a processor, a wireless interface coupled to the processor, and the device above (page 12).

Regarding claims 3, 16, Parkinson discloses the ovonic material contacts with an electrode 151 (Fig. 1).

Regarding claim 18, Parkinson discloses the the substrate is under the first ovonic material.

Regarding claims 24-26, 29, Parkinson discloses wherein the non-switching ovonic material and the phase change material are both formed of a chalcogenide.

Regarding claim 28, Parkinson discloses the wireless includes a dipole antenna (para 0134).

**Claims 1, 3, 14, 16, 24-28, 29 are rejected under 35 USC 102 (e) as being anticipated by Lowrey, U.S. Pub No. 2004/0113137, hereinafter Lowrey.**

Regarding claims 1, 14, 27, Lowrey discloses a product and method of making the product comprising: a non-switching ovonic material 120, a phase changeable material 130 that changes between more conductive and less conductive states (between crystalline, semi-crystalline, amorphous, or semi-amorphous states) coupled to the non-switching ovonic material (Fig. 1, paragraphs 0001, 0025-0033). Parkinson discloses that the ovonic material 120 may remain permanently amorphous and the I-V characteristic may remain the same throughout the operating life [0033]. Since the state of the material 120 doesn't change, the resistance of the layer 120 doesn't change, therefore, the ovonic material 120 is non-switching ovonic material.

Still regarding claim 27, Lowrey discloses the system comprises a processor, a wireless interface coupled to the processor, and the device above (page 13).

Regarding claims 3, 16, Lowrey discloses the ovonic material contacts electrode 151 (Fig. 1).

Regarding claims 24-26, 29, Lowrey discloses wherein the non-switching ovonic material and the phase change material are both formed of a chalcogenide.

Regarding claim 28, Lowrey discloses the wireless includes a dipole antenna (para 0133).

**Claims 1-4, 14-18, 24-27, 29-30 are rejected under 35 USC 102 (e) as being anticipated by Gilton, U.S. Patent No. 6,809,326.**

Regarding claims 1, 14, 27, Gilton discloses a product and method of making the product comprising: a non-switching ovonic material 424 (metal doped chalcogenide material, stable state), a phase changeable material 208 that changes between more conductive and less conductive states (between crystalline, semi-crystalline, amorphous, or semi-amorphous states) coupled to the non-switching ovonic material (Figs. 1, 3; paragraphs 0001,0025-0033).

Still regarding claim 27, Gilton discloses the structure above is used in memory cells, it is inherent that the memory cells can be installed in wireless devices which is inherently coupled to a processor based device.

Regarding claims 2, 4, 15, 17, 18, 30, Gilton discloses forming the ovonic layer 424 over the phase change material 208 and forming a second ovonic layer 204 under the phase change material, and contacting the first and second ovonic materials with electrodes 420, 202 (Fig. 3) and a substrate is inherently formed under these layers in memory cells.

Regarding claims 3, 16, Gilton discloses the ovonic material contact electrode 420 (Fig. 3).

Regarding claims 24, 25, 26, 29, Gilton discloses wherein the non-switching ovonic material and the phase change material are both formed of a chalcogenide (lines 30-35, Col. 3; lines 38-40, col. 5).

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7, 10, 13, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Parkinson et al., U.S. Pub No. 2004/0114413, hereinafter Parkinson.

Regarding claims 5-7, 10, 19-22, Parkinson fails to disclose the shape of the ovonic material and/or phase change materials are in a pore formed in an insulator or having a cup shape. However, it is well known in the art that the selection of such

parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, shape, etc.**, would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art.

"Normally, it is to be expected that a change in **energy, concentration, temperature, time, molar fraction, depth, thickness, shape, etc.**, or in combination of the parameters would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Regarding claim 13, Parkinson discloses the material of the ovonic layer is a stable structure phase [0035].

Claims 8, 9, 11, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Parkinson et al., U.S. Pub No. 2004/0114413, hereinafter Parkinson, in view of Ovshinsky et al, U.S. Pub No. 2004/0178401.



Regarding claims 8, 9, 11, and 23, Parkinson fails to disclose a portion of second ovonic material is on a portion of the phase change material and covering the phase change material with an insulating material or nitride. Ovshinsky discloses filling the phase change material into a pore formed in a dielectric material including a portion of second ovonic material is on a portion of the phase change material (Fig. 3, part of ovonic layer is physical contact with B2 and on GST layer) and the phase change material is covered by insulating layer B2. It would have been obvious to one having ordinary skill in the art to form a portion of second ovonic material on a portion of the phase change material and the phase change material is covered by insulating layer as in Ovshinsky in Parkinson device because portion of ovonic material on a portion of phase change material would provide electrically contacts between the ovonic material, phase change material and conductive material, and the insulating material covering the phase change material for insulation and for protection. It would have been well known in the art that the nitride material is good insulator and widely used as insulating material.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-T (7-6).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thao P. Le  
Primary Examiner  
Art Unit 2818  
July 13, 2006.